

C3  
(cont.)  
Claim 25. A golf club head according to claim 21, wherein said metallic material is an amorphous alloy comprising the elements Zr, Al, Cu, Ni, and Hf or an amorphous alloy comprising the elements Zr, Al, Cu and Ni.--

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REMARKS

Claims 1-25 are pending in the above-identified application. Support for new claims 20-25 is found at pages 8-13 of the specification as well as the Examples described therein, including Example 3. It is submitted that the changes to the claims, specification and abstract include no new matter and are all fully supported by the original disclosure of this application.

It is requested that the above-noted new claims, as well as the changes to claims 1 and 5, be entered of record in order to place the present application into better form for consideration on appeal, should an appeal be necessary, pursuant to 37 C.F.R. 1.116.

**Issues under 35 U.S.C. § 103(a)**

Claims 1-19 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Peker '642 (USP 5,896,642). This rejection is traversed for the following reasons.

**Present Invention**

The present invention is directed to a golf club head which includes a hitting face formed from a metallic material having a specific relationship between the Young's modulus and tensile strength properties thereof, as recited in claims 1 and 21, for example. Claims 1 and 21 additionally recite ranges for each of the Young's modulus and tensile strength properties. Alternative embodiments of the golf club head include a specific relationship between the Young's modulus and Vickers hardness properties, as recited in claim 5, for example. Ranges for the Young's modulus and Vickers hardness are also recited in claim 5.

Advantages exhibited by embodiments of the present invention are evidenced by the comparative test results shown in Tables 1-3 at pages 23-25 of the specification, for example. Note that upon selection of; (1) either the Young's modulus/tensile strength relationship or the Young's modulus/Vickers hardness relationship, and (2) the correct alloy which satisfies the applicable ranges for these properties results in advantageously enhanced minimum

frequency and hitting feeling properties as evidenced by the comparative test results. Thus, the inventors have discovered that selective properties with regard to selective alloys results in advantageously, unexpected properties.

Distinctions between Present Invention and Peker '642

Peker '642 discloses a metallic article formed by bulk-solidifying and amorphous metallic alloy having certain glass transition temperature properties. The metallic article may be used to make a golf club head (60) as shown in Figure 6 and described in connection with Example 1 at column 8. The preferred bulk-solidifying amorphous metallic alloy is Zr plus Ti (45-67%), Be (10-35%), and Cu plus Ni (10-38%) as noted at column 4, lines 13-43. Another preferred type of alloy is Zr plus Hf (25-85%), Al (5-35%), and Cu, Fe, Co and Mn (5-70%).

Peker '642 fails to disclose a golf club head which has a hitting face formed by a metallic material with the recited Young's modulus and Vickers hardness ranges recited in the claims. Peker '642 additionally fails to disclose a golf club head which has a hitting face formed by a metallic material with the recited Young's modulus and tensile strength ranges recited in the claims. Peker '642 also fails to disclose or suggest the relationship between the Young's modulus and tensile strength properties recited in claim

1, or the relationship between the Vickers hardness and Young's modulus properties recited in claim 5, for example. Peker '642 further fails to recognize the advantageously enhanced minimum frequency and hitting feeling properties achieved by the selected alloys employed in the golf club head of the present inventions as evidenced by the Comparative test results provided in Tables 1-3 at pages 23-25 of the specification as discussed above. It is submitted that Peker '642 fails to provide an adequate basis to select the properties recited in the present claims, such that significant patentable distinctions exist between the present claims and Peker '642.

Response to Comments in Final Office Action

It is stated at page 3 of the Final Office Action that,

The difference between the claims and Peker is that Peker does not disclose a Young's modulus of 5,000 to 16,000 kgf/mm<sup>2</sup>, a Vickers hardness of 400 to 1,000 HV, a relationship between Young's modulus and tensile strength as defined by claim 1 and a relationship of Young's modulus and hardness as defined by Claim 5.

It would have been obvious to modify the face of Peker to have a Young's modulus as defined by the claims in order to have face which has a sufficient flex for a specific golfer. In addition, it would have been obvious to have as defined by the claims in order to have a face which maximizes the transfer of energy to a ball at impact.

It is agreed that Peker '642 fails to disclose any of the selected Young's modulus/Vickers hardness/tensile strength property ranges or

relationships recited in the present claims for the selected alloys employed in the present invention. However, the conclusion that it would have been obvious to modify the metal described by Peker '642 in order to obtain the metallic material employed in the golf club head of the present invention fails to be based on any disclosure or suggestion stated in Peker '642, or for that matter, on any objective evidence within the record of the present application. There fails to be any evidence supporting the conclusion that all of the relevant alloys described by Peker '642 must necessarily inherently include all of the selected property ranges and property relationships recited in all of the present claims. Actually, the comparative test data indicates that the alloys along with their respective properties must be correctly selected in order to obtain the advantageously improved metallic material according to the present invention. Consequently, it is submitted that the cited prior art, i.e. Peker '642, fails to provide a suggestion for the desirability of obtaining the claimed invention. MPEP 2143.01, Rev. 1, Feb. 2000, page 2100-98; In re Fine, 5 USPQ2d 1596 (Fed. Cir. 1988). It is additionally submitted that the Final Office Action fails to provide an adequate rationale or any adequate evidence which tends to show that the properties recited in the present claims are inherent in the alloys described by Peker '642, such that this assumption of inherency cannot be made. In re Robertson, 49

1949, 1950-51 (Fed. Cir. 1999); MPEP 2112, Rev. 1, Feb 2000, page 2100-40.

It is submitted for the reasons stated above, that the present claims define patentable subject matter such that this application should be placed into condition for allowance.

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), Applicant(s) respectfully petition(s) for a one (1) month extension of time for filing a reply in connection with the present application, and the required fee of \$110.00 is attached hereto.

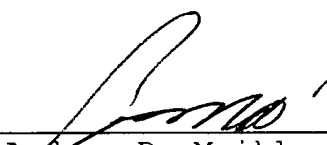
If any questions remain regarding the above matters, please contact Applicant's representative, Andrew D. Meikle, in the Washington metropolitan area at the phone number listed below.

Appl. No. 09/194,112

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By   
Andrew D. Meikle, #32,868

ADM/mar  
0229-0532P

P.O. Box 747  
Falls Church, VA 22040-0747  
(703) 205-8000